Reconocimiento de Patrones

Version 2022-2

Accuracy Estimation

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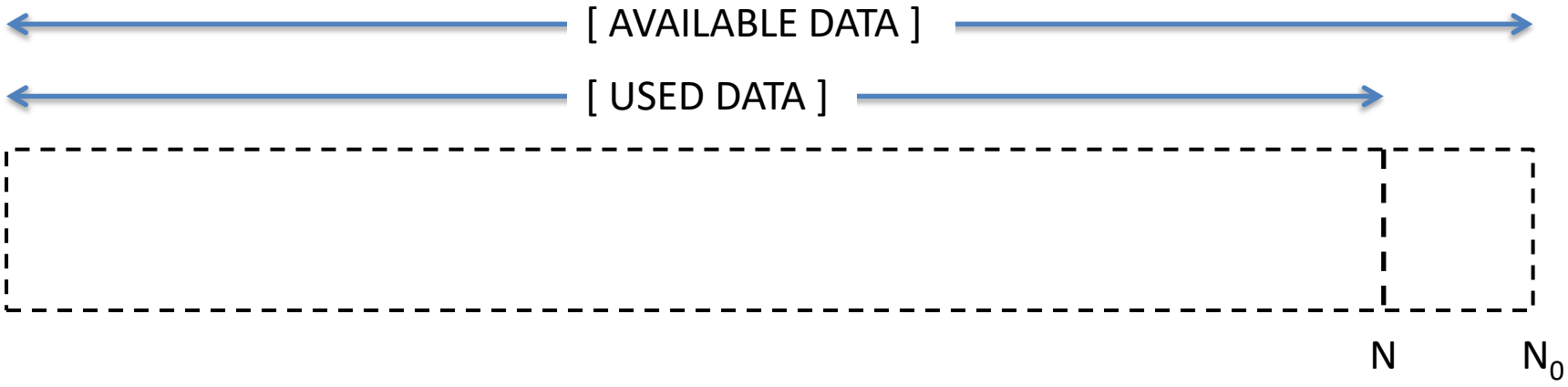
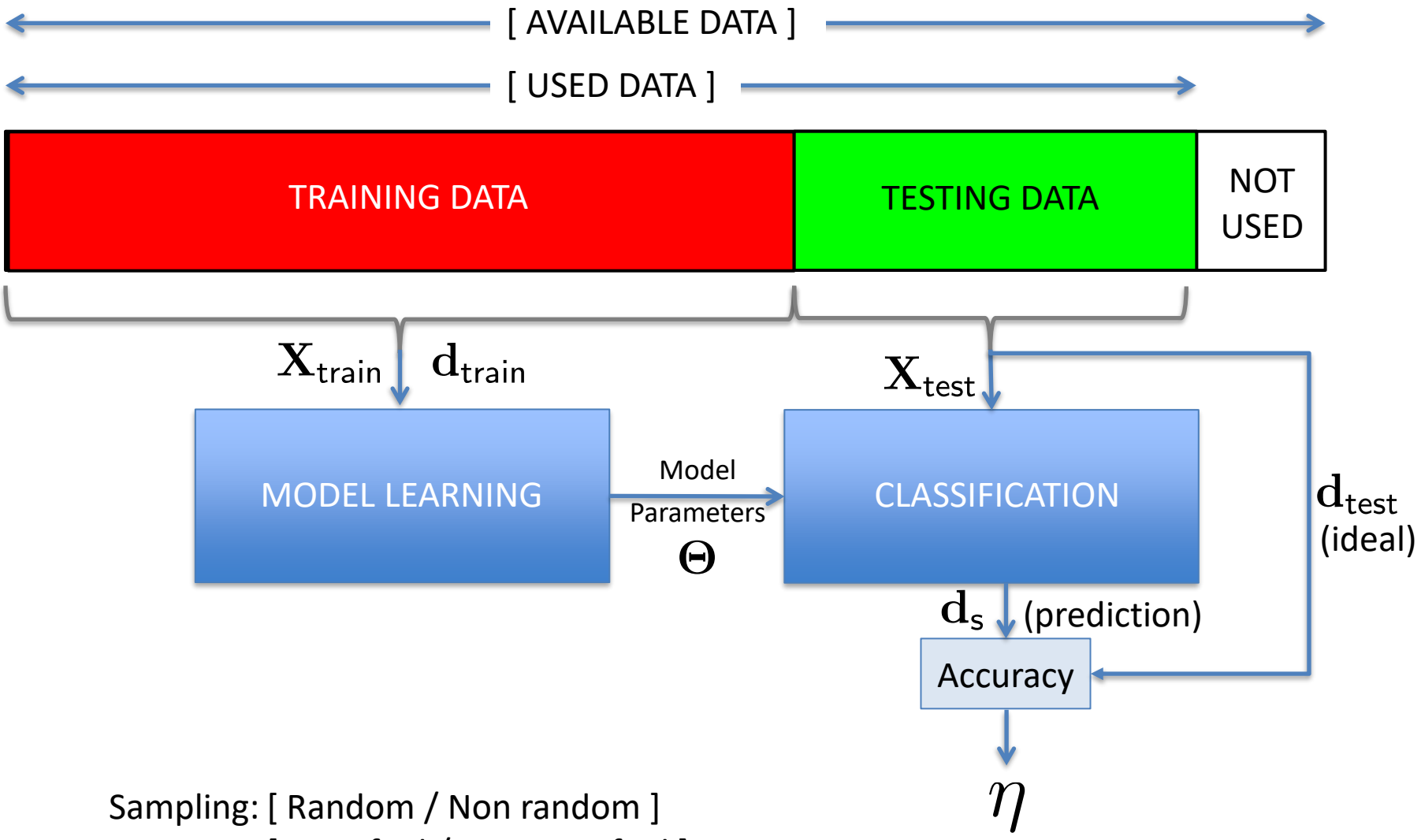
Estimating the Accuracy of a Classifier



Estimating the Accuracy of a Classifier



Sampling: [Random / Non random]
[Stratified / Non stratified]

Estimating the Accuracy of a Classifier

Estimating the Accuracy of a Classifier

η

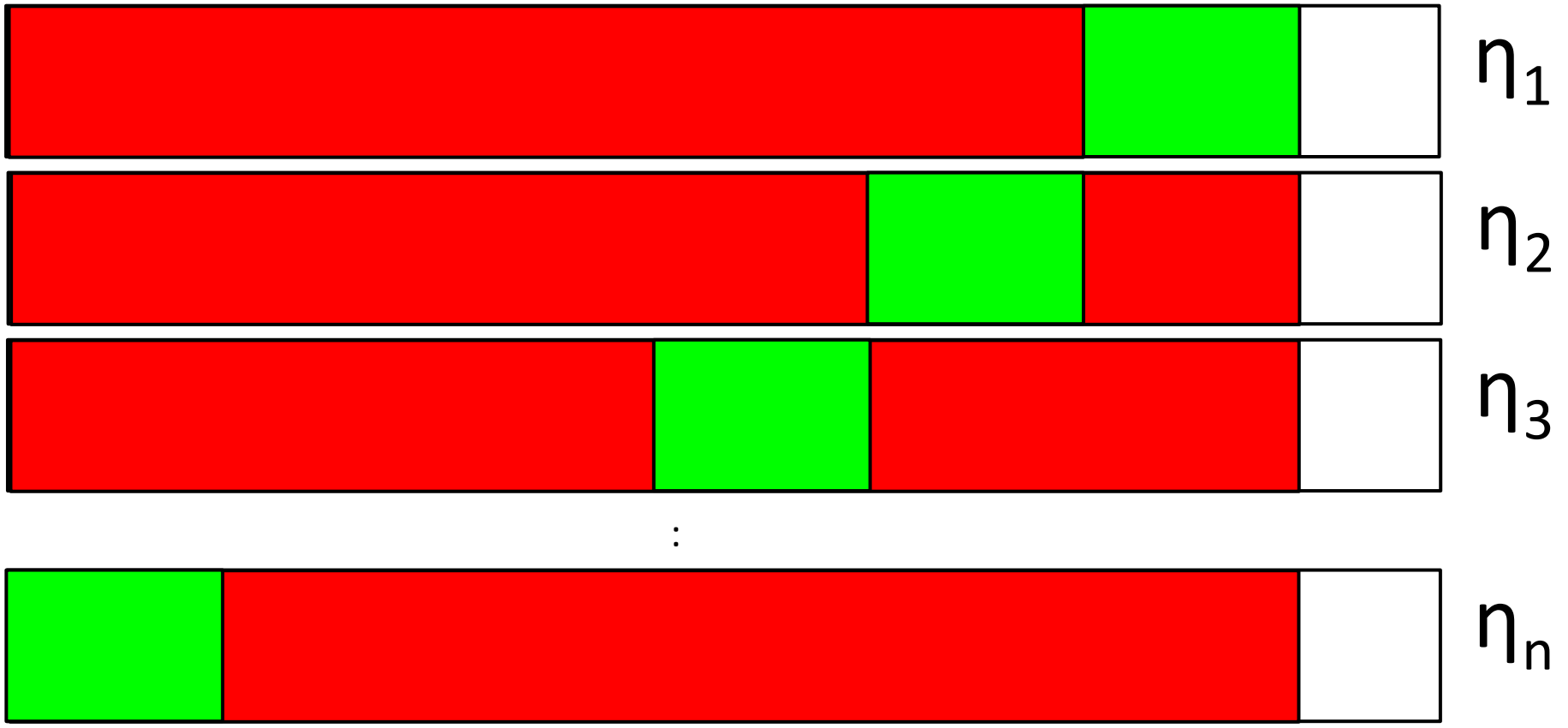
Estimating the Accuracy of a Classifier

HO: HOLD OUT

η

Estimating the Accuracy of a Classifier

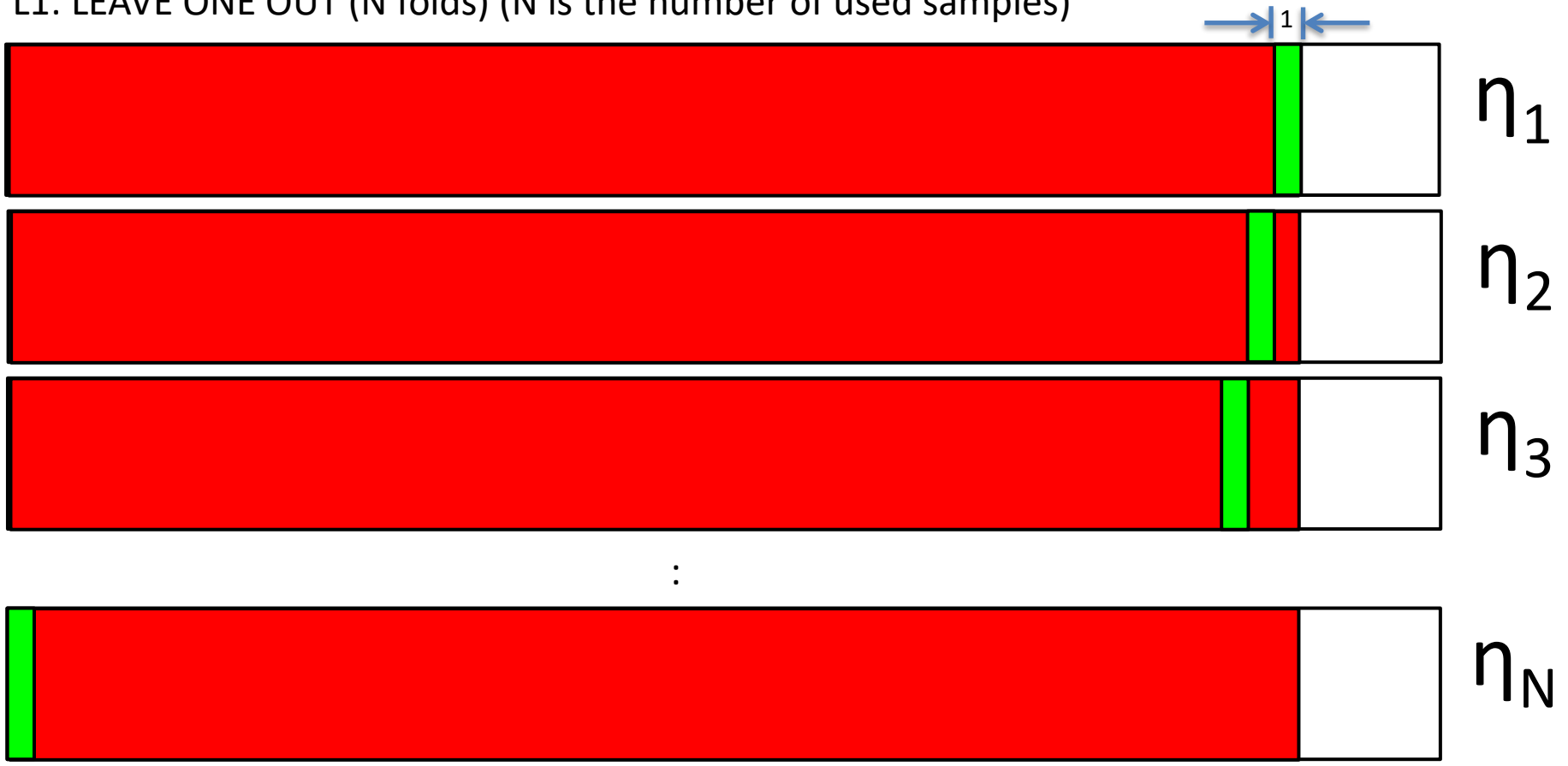
CV: CROSS VALIDATION – n folds



$$\eta = (\eta_1 + \eta_2 + \eta_3 + \ldots + \eta_n)/n$$

Estimating the Accuracy of a Classifier

L1: LEAVE ONE OUT (N folds) (N is the number of used samples)



$$\eta = (\eta_1 + \eta_2 + \eta_3 + \ldots + \eta_N)/N$$

Estimating the Accuracy of a Classifier

L1*: LEAVE ONE OUT (n folds) (with n<N)

$$\eta = (\eta_1 + \eta_2 + \eta_3 + \ldots + \eta_n)/n$$

Estimating the Accuracy of a Classifier

[SIMULATED DATA]

2 Classes

2 Gaussian Distributions

$\mu_1 = (1,1)$

$\mu_2 = (-1,-1)$

$\sigma_1 = \sigma_1 = 1$

500 samples /class

$N_0 = 1000$ (available data)

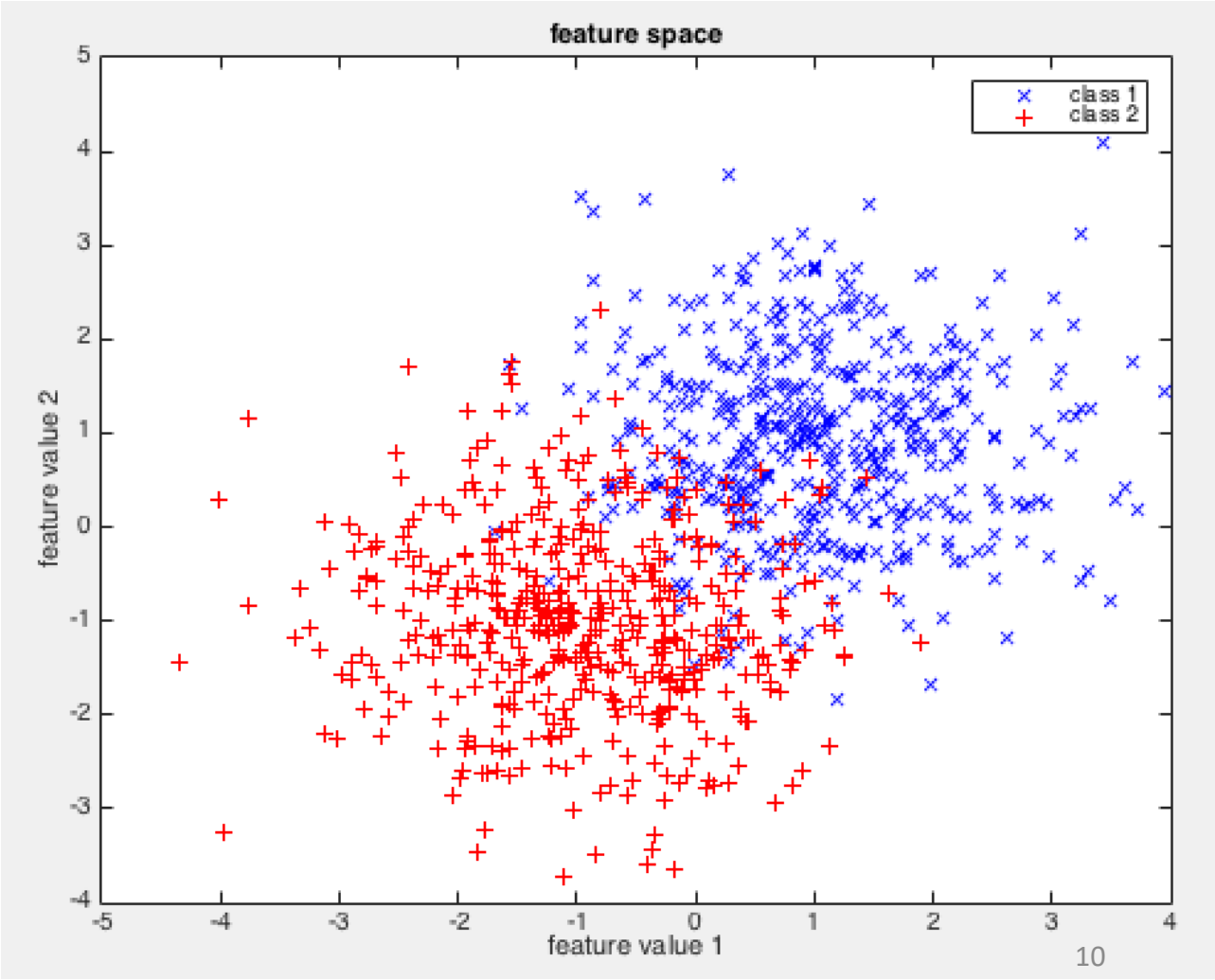
[CLASSIFIER]

Linear SVM (LibSVM)

[SAMPLING]

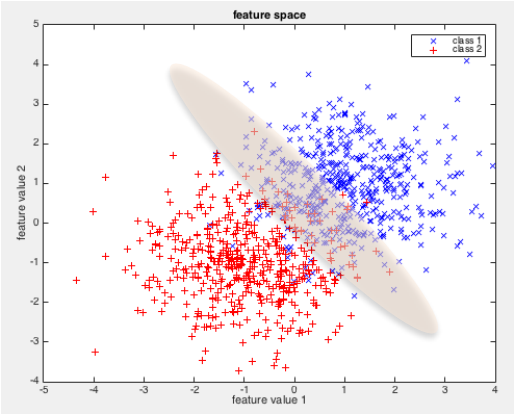
Random / Stratified

1000 Repetitions!



After 1000 Repetitions!

N_0 = 1000 (available data)
N used data



Method:	Parameters	N/N_0	mean	std	min	max
HO:	90%-10%	1	acc =			
HO:	80%-20%	1	acc =			
HO:	75%-25%	1	acc =			
HO:	67%-33%	1	acc =			
HO:	50%-50%	1	acc =			
HO:	90%-10%	0.5	acc =			
HO:	80%-20%	0.5	acc =			
HO:	75%-25%	0.5	acc =			
HO:	67%-33%	0.5	acc =			
HO:	50%-50%	0.5	acc =			
HO:	90%-10%	0.1	acc =			
HO:	80%-20%	0.1	acc =			
HO:	75%-25%	0.1	acc =			
HO:	67%-33%	0.1	acc =			
HO:	50%-50%	0.1	acc =			
CV:	5-fold	1	acc =			
CV:	10-fold	1	acc =			
CV:	5-fold x 20	1	acc =			
CV:	5-fold x 10	1	acc =			
CV:	5-fold x 5	0.5	acc =			
CV:	10-fold	0.5	acc =			
CV:	5-fold x 20	0.5	acc =			
CV:	5-fold x 10	0.5	acc =			
CV:	5-fold	0.1	acc =			
CV:	10-fold	0.1	acc =			
CV:	5-fold x 20	0.1	acc =			
CV:	5-fold x 10	0.1	acc =			
L1:		1	acc =			
L1:		0.5	acc =			
L1:		0.1	acc =			
L1*:	200-fold	1	acc =			
L1*:	100-fold	1	acc =			
L1*:	50-fold	1	acc =			